40th International Symposium on Lattice Field Theory (Lattice 2023)

Monday, July 31, 2023 - Friday, August 4, 2023

Book of Abstracts

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Parallel session / 1

Mass spectroscopy of meson resonances, AdS/QCD, and configurational information entropy measures

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The mass spectroscopy of several families of meson resonances, including heavy-quark QCD exotica and tensor mesons, is scrutinized in the AdS/QCD paradigm using information entropy measures. Informational Regge-like trajectories can probe new physical features of heavier meson resonances with higher excitation numbers. This approach unites AdS/QCD and the experimental mass spectra of several already detected meson families in the Particle Data Group. It provides a composite method for exploring the physical properties of the next generation of meson resonances. I also digress about the most prominent results and main techniques recently introduced in the literature.

Parallel session / 2

Hamiltonian Truncation on the Lattice

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Hamiltonian truncation is a quantum variational method that approximates the ground state by minimizing the energy on a finite truncated basis of Hilbert space. A straightforward application of this method to quantum field theory would seem to be hopeless, since generic states in the Hilbert space have an exponentially small overlap with physical states. Nonetheless, this talk will present evidence that Hamiltonian truncation converges as a power law in the computational time on the lattice in finite volume. The talk will also explain why Hamiltonian truncation in the continuum is doomed for all but the simplest low-dimensional quantum field theories.

Topical area:

Theoretical Developments

Parallel session / 3

Computation of the Kugo-Ojima function from lattice simulations

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We compute the Kugo-Ojima function $u(q^2)$ using large lattice volume simulations, study the volume dependence, and compare with analytical results from Schwinger-Dyson equations. Special attention is given to the infrared behaviour of $u(q^2)$ and the connection with confinement criteria.

Topical area:

Vacuum Structure and Confinement